

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization International Bureau



(43) International Publication Date  
30 June 2005 (30.06.2005)

PCT

(10) International Publication Number  
**WO 2005/059038 A1**

(51) International Patent Classification<sup>7</sup>:  
C22B 7/02, C09C 1/00, 3/00, C22B 3/04

C09C 1/22,

(74) Agent: ROBIC; Centre CDP Capital, 1001, Square Victoria, Bloc E -8e étage, Montréal, QC H2Z 2B7 (CA).

(21) International Application Number:  
PCT/CN2004/002147

(22) International Filing Date:  
16 December 2004 (16.12.2004)

(25) Filing Language:  
English

(26) Publication Language:  
English

(30) Priority Data:  
2,453,005 17 December 2003 (17.12.2003) CA

(71) Applicant (for all designated States except US): FERMAG INC. [CA/CA]; 1075 côte du Beaver Hall, Bureau 200, Montréal, QC H2Z 1S5 (CA).

(72) Inventors; and

(75) Inventors/Applicants (for US only): MORENCY, Maurice [CA/CA]; 112 De Picardie, Saint-Lambert, QC J4S 1T6 (CA). SHAN, Guoji [CA/CA]; 1768, du Collège, Ville St Laurent, Québec H4L2M7 (CA). FONTAINE, Denise [CA/CA]; 6230, 24e Avenue, Rosemont, Montréal H3T3M5 (CA).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

A1

WO 2005/059038

(54) Title: A HYDROMETALLURGICAL SEPARATION PROCESS OF STEEL MILL ELECTRIC ARC FURNACE (EAF) DUST AND THE PIGMENTS OBTAINED BY THE PROCESS

(57) Abstract: A hydrometallurgical process for the treatment of steel mill electric arc furnace (EAF) dust containing agglomerates of small ferrite particles and larger magnetite particles, the process comprising the steps of: a) washing the EAF dust in water to dissolve soluble salts, metals and simple oxides contained in the dust, said washing step being performed under agitation and with an alkaline pH; b) decanting the solution of step a) to obtain a supernatant liquid containing the dissolved salts, metals and simple oxides and a slurry containing ferrites and magnetites, a non toxic amount of leachable lead and a reduced amount of calcium; c) separating the slurry and the supernatant liquid; d) adding to the slurry obtained in step c) an anionic surfactant to disperse the ferrite particles adsorbed on the magnetite particles; and e) treating the slurry from step d) to produce pigments selected from the group consisting of ferrite pigments, magnetite pigments and ferrite/magnetite pigments.